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# Public Health Reports

Treasury Department, United States Marine-Hospital Service. Published in accordance with act of Congress approved February 15, 1893.

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VOL. XV.      WASHINGTON, D. C., DECEMBER 28, 1900.      No. 52.

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## NOTICE.

Any person on the mailing list of the PUBLIC HEALTH REPORTS who, at any time, fails to receive promptly this publication will confer a favor by notifying the Surgeon-General of the United States Marine-Hospital Service.

## UNITED STATES.

### NEW DISINFECTING APPLIANCES—METHODS OF EMPLOYMENT AND DIRECTIONS FOR USE.

In view of the fact that several stations of the Service, quarantine and hospital, have been supplied with the recently devised Kuhn Formaldehyd Generator, the following circular as to its employment has been issued to medical officers, showing the indications and limitations of the usefulness of the apparatus, and giving directions for procuring the best results by the use of the machine.

[Circular letter.]

### DIRECTIONS FOR THE DISINFECTION OF LIVING APARTMENTS AND TEXTILE FABRICS BY THE USE OF THE KUHN FORMALDEHYD GENERATOR.

OCTOBER 31, 1900.

*General scope and applicability of the apparatus.*

*To commissioned officers and acting assistant surgeons  
of the Marine-Hospital Service:*

The Kuhn generator is an apparatus designed for the direct production of formaldehyd by the oxidation and dehydrogenation of wood alcohol in contradistinction to the autoclave or regenerator, in which the formaldehyd gas is evolved from the watery or alcoholic solution of the same.

It has been found by test that the formaldehyd evolved from 1,000 c. c., or approximately 1 quart, of wood alcohol is sufficient for the disinfection of and will exercise a germicidal influence in the atmosphere contained in a space of 2,500 cubic feet. It is suggested that in the disinfection of apartments you will proceed with the ordinary measures looking to rendering the apartment as nearly air-tight as possible. The 1,000 c. c. of wood alcohol, of good quality, should then be placed in the lamp of the apparatus and its ignition and the generation of formaldehyd should be conducted in strict accordance with the explicit directions which accompany each machine. The time of exposure should be six hours, counting from the completion of the combustion of the alcohol. Experiments made in the hygienic laboratory and by an expert chemist employed for the purpose by the company show that the combustion of this quantity of alcohol is effected in from forty-five to fifty-five minutes under ordinary conditions of temperature and barometric pressure. At the end of this period of six hours the apartments should be opened and thoroughly aired. No neutralization with ammonia will be found necessary. Care should be exercised to see that the vessel containing water and acting as a water seal around the cylinder of the generator is always supplied with a depth of about 2 inches of water, which should be as pure as possible. This will result in the efficient disinfection of the apartment which has been subjected to the process.

It is believed, further, that the use of this apparatus will form a good method for the thorough disinfection of baggage and personal effects of crews and passengers without the use of the steam chamber, the other apparatus usually designated for that purpose. (*Not to be employed for disinfection of mattresses and pillows.*)

It is distinctly to be understood, however, that the method is not applicable, and should not be used for the disinfection of bedding, especially mattresses and pillows.

*Disinfection of clothing and personal effects of passengers and crews of ships.*

In using the apparatus for this purpose the garments or fabrics should be disposed upon lines or hooks, and should be so hung upon these as not to lie in immediate contact, and there should be an air space around each article and between each two articles.

The room should be as nearly air-tight as possible, and the same directions apply as above, to use one lamp containing 1,000 c. c. of alcohol for each 2,500 cubic feet of space. Should the room or apartment to be disinfected be larger, 1 lamp should be used for each 2,500 cubic feet or portion thereof. The time of exposure of the articles or garments to the effects of the formaldehyd should be six hours, as stated above, to be counted from the completion of the combustion of the alcohol. At the completion of the process the garments or fabrics should be removed from the room in which they have been disinfected and should be exposed to the action of the air and sunlight, if possible.

Should this not be feasible owing to the lack of time a very short exposure to the air, aided by thorough shaking or brushing, will soon effect the elimination of the formaldehyd from the fabrics subjected to its action. As in the preceding case no ammonia is necessary for neutralization.

WALTER WYMAN,  
*Surgeon-General U. S. M. H. S.*

#### PRACTICAL SUGGESTIONS FOR USING THE GENERATOR.

Full directions for operating the generator accompany each apparatus, but it is thought well to call attention to the following points:

1. The pan containing water, which surrounds the alcohol reservoir, should contain about 3 pints of water, which will fill it to within one-half inch of the top. The water used should be as pure as possible, and an ample quantity should be provided, as by its water-seal action it not only prevents accident, but its gradual evaporation tends to slightly hydrate the gas evolved from the decomposition of the alcohol.

2. The generator should not be heated more than one to one and one-half minutes, and great care should be taken to see that the flame is extinguished before immersing the end of the cylinder in the water reservoir. If this precaution is neglected, combustion continues, the alcohol is consumed, but no formaldehyd gas is evolved, and consequently no germicidal effect is produced.

3. The absorbent material in the alcohol reservoir will easily absorb 1 quart or 1,000 c. c. of alcohol, and in case of emergency 3 pints or 1,500 c. c. may be used, but care should be exercised that no free alcohol should show above the packing material in the reservoir. Should this be the case, the superfluity should be removed before ignition.

4. At the conclusion of the operation the remaining water should be drained from the water pan, and the pan dried. The whole apparatus should then be wiped off with a cloth, and this care will result in longer life of the apparatus, which is a decided advantage, as apart from the question of economy, the older platinized disks seem to give better results and to evolve more gas than those recently prepared.

As has been indicated above, the apparatus should not be relied upon for the disinfection of the interior of mattresses, pillows, and heavily wadded quilts or comfortables. For these articles it is believed that the employment of steam will still be necessary, but a preliminary disinfection of the exposed surfaces of these articles by the formaldehyd generator will, it is thought, render the transportation of these articles to the steam chamber, and their handling by those engaged in disinfection processes, free from the danger which has heretofore attended these operations.